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## AMENDMENTS TO THE CLAIMS

1-34 (Canceled).

1 35. (currently mended) A method of characterizing a large group of biological cells, comprising:

2 a) separating the cells so that the cells of the large group are preponderantly separated from each  
3 other;

4 b) characterizing each cell according to an aspect of the vibrational spectrum each cell. The  
5 method of claim 34, wherein the infrared absorption vibrational spectrum of each cell is  
6 analyzed for indications that the cell is in a cell division stage, and;

7 c) statistically analyzing the characteristics of the groups cells.

8 36. (Original) The method of claim 35, wherein the results of the statistical analysis is the  
9 percentage of the cells of the group which are in a cell division stage.

1 37. (currently mended) The method of claim 36, wherein the indication that a cell is in a cell  
2 division stage is the presence of a signal indicating DNA in the ~~infrared absorption~~  
3 spectra vibrational spectrum.

1 38. (Original) The method of claim 37, wherein the separated cells are located according to the  
2 fluorescence of the cells.

1 39. (new) The method of claim 35, wherein the vibrational spectrum of each cell is the recording  
2 of an infrared absorption spectrum for each cell.

- 1 40. (new) The method of claim 39, wherein the results of the statistical analysis is the  
2 percentage of the cells of the group which are in a cell division stage.
- 1 41. (new) The method of claim 40, wherein the indication that a cell is in a cell division stage is  
2 the presence of a signal indicating DNA in the infrared absorption spectra.
- 1 42. (new) The method of claim 41, wherein the separated cells are located according to the  
2 fluorescence of the cells.
- 1 43. (new) The method of claim 35, wherein the vibrational spectrum of each cell is the recording  
2 of a Raman spectrum for each cell.
- 3 44. (new) The method of claim 43, wherein the results of the statistical analysis is the  
4 percentage of the cells of the group which are in a cell division stage.
- 1 45. (new) The method of claim 44, wherein the indication that a cell is in a cell division stage is  
2 the presence of a signal indicating DNA in the infrared absorption spectra.
- 1 46. (new) The method of claim 45, wherein the separated cells are located according to the  
2 fluorescence of the cells.

- 1 47. (new) A method, comprising:
- 2 locating a very large number of cells with a location means;
- 3 illuminating the cells with light;
- 4 recording light emitted from the cells; and
- 5 characterizing the vibrational spectrum of the light emitted from the cells located by the location
- 6 means, wherein the vibrational spectrum is analyzed for indications that the cell is in a
- 7 cell division stage.
- 1 48. (new) The method of claim 47, wherein the vibrational spectrum characterization means
- 2 comprises a means for generating and for transmitting infrared light through each cell.
- 1 49. (new) The method of claim 48, wherein the means for generating infrared light comprises a
- 2 first laser having a first defined infrared wavelength.
- 1 50. (new) The method of claim 49, wherein the first laser is pulsed when the location means
- 2 locates a first cell in a position to be characterized by the first laser.
- 1 51. (new) The method of claim 49, wherein the first defined wavelength comprises a
- 2 wavelength wherein DNA is highly absorbing.
- 1 52. (new) The method of claim 51, wherein a second laser having a second infrared
- 2 wavelength is pulsed to characterize the cell, wherein the second infrared wavelength
- 3 comprises a wavelength wherein RNA is highly absorbing.
- 1 53. (new) The method of claim 48, wherein the means for generating infrared light comprises a

- 1 third laser having a broad band infrared wavelength range.
- 2 54. ( new) The method of claim 53, wherein the third laser is pulsed when the location means  
3 locates a first cell in a position to be characterized by the laser.
- 1 55. ( new) The method of claim 54, wherein the broad band infrared wavelength range includes  
2 a wavelength wherein DNA is highly absorbing.
- 1 56. ( new) The method of claim 55, wherein the broad band infrared wavelength range  
2 includes a wavelength wherein RNA is highly absorbing.
- 1 57. ( new) The method of claim 56, wherein the infrared absorption spectrum of each cell is  
2 recorded.
- 1 58 ( new) The method of claim 57, wherein the infrared absorption spectrum of each cell is  
2 analyzed for indications that the cell is in a cell division stage.
- 1 59. ( new) The method of claim 58, wherein the percentage of the cells in the cell division stage  
2 is calculated.
- 1 60. ( new) The method of claim 59, wherein the indication that a cell is in a cell division stage is  
2 the presence of a signal indicating DNA in the infrared absorption spectra.
- 1 61. ( new) The method of claim 47, wherein the location means is a fluorescence activated  
2 sorting method
- 1 62. ( new) The method of claim 47, wherein the vibrational spectrum characterization means  
2 comprises a means for illuminating the cells, and a means for analyzing the Raman  
3 scattered light emitted from the cells.

- 1 63. ( new) The method of claim 62, wherein the means for illuminating the cells comprises a  
2 first laser having a first defined wavelength.
- 1 64. ( new) The method of claim 63, wherein the first laser is pulsed when the location means  
2 locates a first cell in a position to be illuminated by the first laser.
- 1 65. ( new) The method of claim 64, wherein the Raman spectrum of each cell is recorded.
- 1 66. ( new) The method of claim 65, wherein the Raman spectrum of each cell is analyzed for  
2 indications that the cell is in a cell division stage.
- 1 67. ( new) The method of claim 66, wherein the indication that a cell is in a cell division stage is  
2 the presence of a signal indicating DNA in the Raman spectra.